

Seeing is Believing

from **Celebrating Chemistry**



Chemists Celebrate Earth Day

Look around you. What do you see? ...maybe a window? ...a book? ...a marker? ...a television? There is something else that is all around you no matter where you are, but you cannot see it. Do you know what it is? It's air!

Is it possible to capture air? In this activity you will prove the presence of the air around you by making a parachute out of materials found around your house. You will also determine which materials can capture or "trap" air.

Materials:

- ❖ Metric ruler
- ❖ Blunt scissors
- ❖ String that will fit through the buttonholes
- ❖ Large, heavy 4-hole button to be used as the weight
- ❖ Handkerchief

NOTE: If you do not have a square handkerchief, try using a square paper towel.



Be sure to follow Milli's Safety Tips and do this activity with an adult!

Have your adult partner help you use the scissors.

Procedure

1. Using your ruler and the scissors, carefully measure and cut 4 pieces of string, each with a length of 30 cm.
2. Lay the handkerchief flat. Tie the end of one piece of string firmly onto a corner of the handkerchief. Most of the string should hang down from the corner.
3. Repeat step 2 with the remaining 3 pieces of string.
4. Thread the end of one of the pieces of string through a hole in the button.
5. Tie a knot in the string so that the button cannot fall off.
6. Repeat steps 4 and 5 with the other 3 pieces of string, passing each piece of string through one hole in the button. Try to tie your knots to keep all four pieces of string the same length and try to keep the string from becoming tangled.
7. Pinch and hold the handkerchief by the center, allowing the button to hang below it, forming a parachute.
8. Before you let the parachute drop, ask your adult helper to help you choose your launch location.
9. Launch your parachute by letting it drop from your hand. What happens to the handkerchief? Does it change shape? Why or why not? Record your observations in the "What Did You Observe?" section.
10. Thoroughly clean your work area and wash your hands.



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What Did You Observe?

Draw a picture of your parachute as it looked when it was falling.

Describe what happened to the handkerchief's shape when you dropped the parachute:

Try this...

Try using a paper towel and plastic grocery bag to make other parachutes. Compare how they fall.

Where's the Chemistry?

When making a parachute, one of the most important components is the material of the parachute. You want something that can "trap" air. However, not all materials can do that. Some materials allow air to pass through them, and other materials do not. Some materials are too heavy or fragile to make good parachutes.

The material used for the parachute itself must be strong, but cannot be heavier than the string and weight.

The parachute "traps" air under it. The air is made up of extremely tiny particles called molecules. These molecules are gases. Their names are nitrogen, oxygen, argon, water vapor, carbon dioxide, plus a few other gases. With all those molecules making up the air, there is a lot that helps hold a parachute up as it falls through the air.



The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at www.acs.org/kids.

Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

Never eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

Never experiment on your own!

For more detailed information on safety go to www.acs.org/education and click on "Safety Guidelines".

